

CLAIMS

1 1. A host comprising:
2 a processor;
3 a host memory coupled to said processor; and
4 a host-fabric adapter coupled to said processor and provided to interface with a switched
5 fabric including one or more fabric-attached I/O controllers, the host-fabric adapter including
6 logic for accessing a translation and protection table from said host memory for a data
7 transaction, said translation and protection table including a plurality of translation entries and at
8 least one region entry, said at least one region entry comprising multiple levels of translation
9 entries.

1 2. The host as claimed in claim 1, wherein each of said plurality of translation entries
2 comprises an entry type field to distinguish between one of said translation entries and said at least
3 one region entry, and said at least one region entry comprises an entry type field to distinguish
4 between one of said translation entries and said at least one region entry.

1 3. The host as claimed in claim 1, wherein said at least one region entry corresponds
2 to a specific region comprising said multiple levels of translation entries within said translation and
3 protection table.

1 4. The host as claimed in claim 1, wherein said at least one region entry comprises a
2 key field to validate a key entry that indexes said at least one region entry.

1 5. The host as claimed in claim 1, wherein said at least one region entry comprises a
2 translation handle field to determine said translation entry that contains desired page information.

1 6. The host as claimed in claim 1, wherein said at least one region entry comprises a
2 region type field to distinguish between a plurality of types of regions.

1 7. The host as claimed in claim 6, wherein said plurality of types of regions comprises
2 a window region type and a window extension entry type, each window region type being
3 associated with a first window extension entry type and a second window extension entry type.

1 8. The host as claimed claim 7, wherein data within said first window extension entry
2 type and said second extension entry type relate to a starting address of a mapped region and a
3 length of said mapped region.

1 9. The host as claimed in claim 1, wherein said host-fabric adapter performs virtual to
2 physical address translation and validates access to said host memory using entries in said
3 translation and protection table.

1 10. A network comprising:
2 a switched fabric;
3 I/O controllers coupled to said switched fabric; and
4 a host comprising an operating system, a host memory, and a host-fabric adapter to access
5 a translation and protection table from said host memory for a data transaction, said translation
6 and protection table including a plurality of translation entries and at least one region entry, said at
7 least one region entry comprising multiple levels of translation entries.

1 11. The network as claimed in claim 10, wherein each of said translation entries
2 comprises an entry type field to distinguish between one of said translation entries and said at least
3 one region entry, and said at least one region entry comprises an entry type field to distinguish
4 between one of said translation entries and said at least one region entry.

1 12. The network as claimed in claim 10, wherein said at least one region entry
2 corresponds to a specific region comprising said multiple levels of translation entries within said
3 translation and protection table.

1 13. The network as claimed in claim 10, wherein said at least one region entry
2 comprises a key field to validate a key entry that indexes said at least one region entry.

1 14. The network as claimed in claim 10, wherein said at least one region entry
2 comprises a region type field to distinguish between a plurality of types of regions.

1 15. The network as claimed in claim 14, wherein said plurality of types of regions
2 comprises a window region type and a window extension entry type, each window region type
3 being associated with a first window extension entry type and a second window extension entry
4 type.

1 16. The network as claimed in claim 15, wherein data within said first window
2 extension entry type and said second extension entry type relate to a starting address of a mapped
3 region and a length of said mapped region.

1 17 An apparatus that stores translation and protection table entries for virtual to
2 physical address translations, and that validates access requests for individual translation and
3 protection table entries, said translation and protection table to comprise a plurality of translation
4 entries and at least one region entry, said at least one region entry to comprise multiple levels of
5 translation entries.

1 18. The apparatus of claim 17, wherein each of said plurality of translation entries
2 comprises an entry type field to distinguish between one of said translation entries and said at least

3 one region entry, said at least one region entry comprising an entry type field to distinguish
4 between said plurality of translation entries and said at least one region entry.

1 19. The apparatus of claim 17, wherein said at least one region entry comprises a key
2 field to validate a key entry that indexes said at least one region entry.

1 20. The apparatus of claim 17, wherein said at least one region entry comprises a
2 region type field to distinguish between a plurality of types of regions.

1 21. The apparatus of claim 20, wherein said plurality of types of regions comprises a
2 window region entry type and a window extension entry type, each window region type being
3 associated with a first window extension entry and a second window extension entry.

1 22. The apparatus of claim 21, wherein data within said first window extension entry
2 type and said second extension entry type relate to a starting address of a mapped region and a
3 length of said mapped region.

1 23. A host-fabric adapter coupled to a processor and provided to interface with a
2 switched fabric, the host-fabric adapter including logic for accessing a translation and protection
3 table from a memory for a data transaction, the translation and protection table including a

4 plurality of translation entries and at least one region entry, said at least one region entry
5 comprises multiple levels of translation entries.

1 24. The host-fabric adapter of claim 23, wherein said plurality of translation entries
2 comprises an entry type field to distinguish between one of said translation entries and said at least
3 one region entry, and said at least one region entry comprises an entry type field to distinguish
4 between one of said translation entries and said at least one region entry.

1 25. The host-fabric adapter of claim 23, wherein said at least one region entry
2 comprises a key field to validate a key entry that indexes said at least one region entry.

1 26. The host-fabric adapter of claim 23, wherein said at least one region entry
2 comprises a region type field to distinguish between a plurality of types of regions.

1 27. A method of validating an access request to a host, said host being coupled to a
2 switched fabric and including a processor, a host memory coupled to the processor and a host-
3 fabric adapter coupled to the processor and provided to interface with the switched fabric, the
4 method comprising:

5 accessing a translation and protection table from said host memory for a data transaction,
6 said translation and protection table including a plurality of translation entries and at least one
7 region entry, said at least one region entry comprising multiple levels of translation entries;

8 receiving a key entry that indexes one of said translation entry and said region entry; and
9 comparing a key field in said one of said translation entries and said region entry to
10 validate access.

1 28. The method of claim 27, wherein each of said plurality of translation entries
2 comprises an entry type field to distinguish between one of said translation entries and said at least
3 one region entry, and said at least one region entry comprises an entry type field to distinguish
4 between one of said translation entries and said at least one region entry.

1 29. The method of claim 27, wherein said at least one region entry comprises a region
2 type field to distinguish between a plurality of types of regions.

1 30. The method of claim 29, wherein said plurality of types of regions comprises a
2 window region type and a window extension entry type, each window region type being
3 associated with a first window extension entry type and a second window extension entry type.